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AMERICAN MUSCOID FLIES OF THE GENERA CERATOMYIELLA AND PARADIDYMA

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THIS paper contains a discussion of the generic characters of the tachinid genera *Ceratomyiella* and *Paradidyma*, keys for separating the species in both sexes, and descriptions of 24 species, of which 15 are new to science. The material used is preserved in the United States National Museum, the Kansas University Museum, and my own collection.

I am under great obligations to the late Dr. J. M. Aldrich for the privilege of studying the material in the National Museum collection, which he kindly assembled and forwarded to me, and for carrying on considerable correspondence, in which very helpful notes on the genotype of *Paradidyma* were supplied through the generous cooperation of Miss Daphne Aubertin, of the British Museum. To Dr. R. H. Beamer I am indebted for permission to examine the type specimens of *Lachnomma magnicornis* Townsend and *Atrophopoda braueri* Williston, in addition to other material, in the Kansas University Museum.

The genera here under consideration may be readily recognized by the row of bristles extending down the inner margin of the parafacial and the bare first vein of the wing. In the female the fore claws and pulvilli are small or atrophied. There are a number of genera sharing this combination of characters except that the first vein of the wing is beset with hairs. Among approximately 200 specimens of *Ceratomyiella* and *Paradidyma* examined in the pres-

ent study, I have seen but one specimen (*P. singularis*) in which the first vein is not entirely bare; this specimen has only one or two hairs present on the vein. When the persistently bare first vein is considered throughout the group, the character seems to be of generic importance, and I have included in the present genera only those forms that agree in this respect.

Genus CERATOMYIELLA Townsend

Ceratomyiella TOWNSEND, Trans. Amer. Ent. Soc., vol. 18, p. 379, 1891. (Genotype, *C. conica*, new species.)—BRAUER and BERGENSTAMM, Die Zweiflügler des kaiserlichen Museums zu Wien, no. 6, p. 189, 1893.—ALDRICH, Catalogue of North American Diptera, p. 427, 1905.

Atrophopalpus TOWNSEND, Ent. News, vol. 3, p. 130, 1892. (Genotype, *A. angusticornis*, new species.)—COQUILLET, Revision of the Tachinidae of America, p. 126, 1897.—ALDRICH, Catalogue of North American Diptera, p. 475, 1905.

Oedemapeza TOWNSEND, Smithsonian Misc. Coll., vol. 51, p. 65, 1908. (Genotype, *Atrophopoda townsendi* Williston.)

All of the type species concerned have been examined in arranging the above synonymy. The principal character, listed among others in the description of *Atrophopalpus*, is the reduced size of the palpi; although somewhat smaller than in the genotype of *Ceratomyiella*, they are nevertheless distinctly developed, and the relative difference in size can hardly be considered of more than specific importance. *Oedemapeza* was established by the mere citation of a species as the type. The genus *Ceratomyiella* is closely related to *Paradidyma*, from which it differs most obviously in having the eyes bare.

Generic characters (from the type species).—Eyes bare. Front not prominent at antennae, where the length of head distinctly exceeds the vibrissal axis. Antennae nearly as long as face, inserted above middle of eyes, basal segments short. Arista with short basal segments. Face receding, the depression broad and deep. Facial ridges practically bare, weakly divergent below. Parafacial with a row of bristles on the inner margin extending from the lowermost frontals to level with lower edge of eye. Vibrissae situated on the front edge of mouth. Proboscis short, labella fleshy. Palpi rather short and slender. Cheek one-third to two-fifths the eye height. Male with one pair, female with two pairs, of proclinate orbital bristles. Frontals extending below middle of second antennal segment, uppermost larger, reclinate. Ocellars present, proclinate. Inner verticals developed, outer pair moderately developed in female, vestigial in male.

Thoracic chaetotaxy: Acrostichal, 2, 1 (postsutural pair hairlike, situated in transverse line with hindmost dorsocentrals); humeral, 2;

posthumeral, 1; presutural, 1; dorsocentral, 2, 3; notopleural, 2; intraalar, 2; supraalar, 3; postalar, 2; hypopleural, 3 or 4; pteropleural, 1 (small); sternopleural, 1, 1; scutellum with two laterals besides one smaller decussate apical pair. Postscutellum normally developed. Infrascutal hairs absent.

Abdomen rather narrow and slightly elongate, without discal bristles.

Legs long and slender; fore tarsi in female compressed and swollen, the basal segment nearly as long as tibia, claws and pulvilli minute; in male the fore tarsi normal with short but distinct claws and pulvilli.

Wings normal in shape; veins bare except the third, which is setulose almost to small cross vein; last section of fifth vein short; apical cell closed with a short petiole reaching costa shortly before wing tip; costal spine developed.

KEY TO SPECIES OF CERATOMYIELLA

1. Apical cell closed and usually petiolate----- 3.
Apical cell open----- 2.
2. Male with orbitals; epaulets black; last three abdominal segments largely gray pollinose, the narrow hind margins subshining, male only (New Jersey)----- (5) *orbitalis*, new species.
Male without orbitals; epaulets red; last three abdominal segments shining black on apical half; third antennal segment in female very slender (Florida)----- (4) *angusticornis* (Townsend).
3. Legs black----- 4.
Femora reddish yellow (United States, widespread)-- (1) *conica* Townsend.
4. Parafacial bristles reduced to small hairs in upper half of row; fourth abdominal segment polished black, usually without pollen; petiole of apical cell shorter than small cross vein (Texas, New Mexico, Arizona)----- (3) *bicincta*, new species.
Parafacial bristles not noticeably reduced in size above; fourth abdominal segment thinly pollinose on basal third; petiole of apical cell about one-third the length of apical cross vein, male only (West Indies)----- (2) *townsendi* (Williston).

(1) CERATOMYIELLA CONICA Townsend

Ceratomyiella conica TOWNSEND, Trans. Amer. Ent. Soc., vol. 18, p. 380, 1891.

Male.—Front at vertex 0.3 and 0.31 of the head width (two specimens), gradually widening to antennae; median stripe reddish brown, hardly more than half the parafacial width on entire length; parafrontals black and subshining, viewed from the side thinly pollinose; face and parafrontals thinly gray pollinose; antennae reddish black, third segment broader than parafacial, six or seven times longer than second; arista brown, thickened about to middle; palpi

pale yellow, slender to tip; back of head shining black above, thinly gray pollinose and sparsely pale haired downward.

Thorax black, lightly dusted with gray pollen; dorsal black stripes poorly defined behind suture; scutellum black, indistinctly pollinose, without discals; infrasquamal hairs absent; calypters transparent, front lobes colorless, hind ones tawny.

Abdomen shining black, last three segments pruinose on basal third; first and second segments bearing a pair of median marginal bristles; third and fourth each with a marginal row of six or eight; no discals.

Legs reddish yellow, tibiae more or less infuscated, tarsi black.

Wings with a tawny tinge, paler on hind margins; hind cross vein perpendicular to fourth, which it joins slightly nearer bend than small cross vein; epaulets red.

Female.—Front at vertex 0.27 and 0.25 of the head width in two specimens; third antennal segment slender, about five times longer than second; arista thickened near the base, clothed with short hairs; cheek about one-third the eye height; front tarsi as noted under generic description.

Length.—5 mm.

Remarks.—Redescribed from 2 males and 2 females: 1, College Station, Tex., December 4, 1932 (H. J. Reinhard); 1, A. and M. College, Miss. (F. M. Hull); 1, Opelousas, La., without collector's label; and the other, Dead Run, Fairfax County, Va. (R. C. Shannon). The type locality is Carlinville, Ill. The species is easily recognized by the red femora.

(2) *CERATOMYIELLA TOWNSENDI* (Williston)

Atrophopoda townsendi WILLISTON, Trans. Ent. Soc. London, 1896, p. 356, pl. 11, fig. 93.

Paradidyma townsendi ALDRICH, Catalogue of North American Diptera, p. 474, 1905.

Oedemapeza townsendi TOWNSEND, Smithsonian Misc. Coll., vol. 51, p. 65, 1908.

Male.—Front at vertex 0.28 and 0.27 of the head width in two specimens, widening uniformly downward; parafrontals blackish, thinly dusted with white pollen; median stripe reddish brown, slightly narrower than one parafrontal on entire length; frontal bristles about five in number, extending to level with apex of second antennal segment, uppermost pair of moderate length, reclinate, others directed inward; ocellars small but distinct, proclinate; one proclinate orbital bristle situated at middle of front; verticals one pair (inner) developed; face moderately excavated, receding, gray pollinose, its ridges bare; parafacials narrow, gray pollinose, bearing a row of moderate-sized bristles on inner margin, bare outside

the main row; vibrissae situated on oral margin; antennae as long as face, basal segments yellow, third brownish, thickly covered with dense pale pubescence and about seven times longer than second segment; arista about as long as third antennal segment, thickened on proximal third, reddish, basal segments darker, short but distinct; eyes bare; cheek in profile about one-fifth the eye height; proboscis short; palpi slender, pale yellow; back of head subshining above, gray pollinose and pale haired below.

Thorax and scutellum black, dusted with gray pollen; mesonotum marked with two heavy black stripes, which extend from the anterior margin to base of scutellum without interruption at suture; chaetotaxy as in *C. conica*; postscutellum thinly gray pollinose; no infra-squamal hairs; calypters transparent, faintly tawny.

Abdomen rather slender, shining black; intermediate segments with bluish-white pollen bands on basal fourth above, becoming wider on the sides and venter; fourth segment pruinose on proximal third; two basal segments each with a pair of median marginal bristles; third and fourth with a marginal row; no discals; genital segments black, small, and retracted.

Legs rather long and slender, blackish; front claws and pulvilli short but distinct.

Wings tinged with brown on anterior margin, grayish hyaline behind; veins bare except third, which is haired to small cross vein; hind cross vein perpendicular to fourth, joining it midway between bend and small cross vein; apical cell closed, the petiole nearly one-third the length of the broadly concave apical cross vein, reaching costa shortly before tip of wing; costal spine small.

Length.—4 mm.

Remarks.—Redescribed from two males in my collection from the West Indies, donated by D. G. Hall; labeled "Mustique Island, May."

The species varies considerably in the degree of infuscation of the wings. Four specimens in the United States National Museum, according to Dr. J. M. Aldrich, all have the wings more distinctly infuscated than described above, agreeing better in this respect with Williston's description. The species is closely related to *conica*, from which it is readily distinguished by the black legs, longer petiole of apical cell, and other characters.

I have not seen any specimens of the female. The type locality is St. Vincent, British West Indies.

(3) *CERATOMYIELLA BICINCTA*, new species

Male.—Front at vertex 0.297 of the head width (one specimen), not prominent at antennae; parafrontals gray pollinose to vertex,

bearing a few scattered inconspicuous hairs outside of frontal rows; median stripe short, brownish black, narrower than one parafrontal on entire length; verticals two pairs, outer ones about half as long as inner, curving outward and backward; ocellars present, proclinate; frontals about five in the row, extending about to middle of second antennal segment, uppermost pair larger and reclinate, the pair next in front of these erect, decussate at tip, others directed inward; one proclinate orbital bristle situated midway between the anterior ocellus and base of antennae; face rather long and deep, gray pollinose on reddish ground color, its ridges hardly divergent downward, practically bare; vibrissae on the front edge of the mouth; parafacials narrow, gray pollinose, bearing a row of bristles which are reduced to small hairs on the upper half; antennae reddish yellow, as long as the face, third segment darker, about seven times longer than second, which bears one long and numerous shorter bristles on front side; arista about as long as third antennal segment, finely pubescent, thickened and yellow on proximal two-fifths, black beyond, penultimate segment about twice as long as broad; proboscis short, labella fleshy; palpi slender to tip, pale yellow, bearing a few short black hairs near apex; cheek bare, gray pollinose on red ground color, about one-fourth the eye height; posterior orbits broad to middle, thence narrowed upward, thickly covered with gray pollen; back of head sparsely pale haired, gray pollinose; eyes bare.

Thorax black, gray pollinose; mesonotum marked with three broad pale gray and two slightly narrower opaque black stripes, which extend from the anterior margin to base of scutellum; the latter black, dusted with changeable gray pollen, bearing two laterals (with a large supernumerary bristle on one side), apical pair strongly decussate; other details of chaetotaxy as in *conica*; calypters transparent, white; postscutellum normal; no infrascutal hairs.

Abdomen shining black; intermediate segments with silvery bands on basal fourth to third, extending on venter to median line; first and second segments each with a pair of median marginal bristles; third with four marginals, none below the lateral pair; fourth with a complete marginal row of about 12; no discals; genitalia small, retracted; inner forceps blackish, short and united, moderately wide at base, which is haired behind, tapering sharply to middle, slender and shining beyond, tip acute; outer forceps largely yellow, convex on outer side, tips acute and blackish, slightly longer than inner ones; penis short, black, apex bordered with a narrow white membrane; fifth sternite narrowly and deeply incised, the lobes shining black, sparsely clothed behind with short, black hairs.

Legs largely black, trochanters yellow, coxae less distinctly so; fore tarsal segments normal, the claws and pulvilli short but distinct; mid tibia with a whorl of three bristles near middle, the one on outer front side stout; hind tibia with only three strong bristles on outer posterior edge.

Wings with a brownish tinge on broad anterior margin, somewhat paler behind; venation bare except third vein, which is setulose almost to small cross vein; fourth vein with a broadly rounded stumpless bend, concave beyond; hind cross vein perpendicular to fourth, joining it midway between small cross vein and bend; apical cell closed, petiole short, reaching costa shortly before the wing tip; epaulets blackish; costal spine developed but not very strong.

Female.—Front at vertex 0.296 of the head width (average of five: 0.3; 0.29; 0.29; 0.29; 0.29), widening uniformly to antennae; the usual two proclinate orbitals present; verticals two pairs; antennae a little shorter than face, third segment narrow but wider than parafacial below, about five times longer than the second; arista thickened on proximal fourth, pubescent to tip; cheek about one-fourth the eye height; fore tarsi compressed, the segments slightly swollen, claws and pulvilli minute.

Length.—Male, 6 mm; female, 5.5 to 7 mm.

Type.—Male, U.S.N.M. no. 44758, from College Station, Tex.

Remarks.—Described from eight specimens. In my collection, 1 male and 3 females, College Station, Tex., September 25 and October 11, 1930, August 24, 1931, and October 19, 1933 (H. J. Reinhard). In the United States National Museum, 4 females as follows: 1, Brownsville, Tex., June (C. H. T. Townsend); 1, Yuma, Ariz., June 26, 1917 (J. M. Aldrich); 2, Las Cruces, N.Mex., one labeled "Ckll. 2293, Aug. 1894", the other without collector's label. The specimen collected by Cockerell also bears Coquillett's determination label, *Paradidyman singularis* Townsend.

The species is strictly congeneric with the type species, *conica*, from which it differs in having black legs and broad, well-defined thoracic stripes; in being more robust in build; and in other characters.

(4) CERATOMYIELLA ANGUSTICORNIS (Townsend)

Atrophopalpus angusticornis TOWNSEND, Ent. News, vol. 3, p. 130, 1892.

Male.—Front at extreme vertex 0.271 of the head width (one specimen), widening gradually downward to antennae; sides of front, face, and cheeks gray pollinose; median stripe red, narrower than one parafrontal; outer verticals and orbitals absent; ocellars proclinate; uppermost frontal reclinate, others directed inward, extending below middle of second antennal segment; face rather deeply excavated, receding and concave above mouth in profile; facial ridges

moderately divergent downward, practically bare; vibrissae on level with front edge of mouth; antennae as long as the face, basal segments yellow, second distinctly longer than the first and about one-sixth the length of third, which is black except at extreme base; arista brown, thickened on basal fourth, slender beyond middle, second segment short; parafacial bearing a row of bristles, which become longer and stronger downward, a few hairs outside the large bristles on lower extremity; cheek nearly two-fifths the eye height; palpi but little longer than thickness of proboscis at point of attachment, pale yellow, bearing two black hairs near apex; eyes practically bare.

Thorax and scutellum black, gray pollinose; four black stripes on mesonotum, outer ones broader, stopping shortly before base of scutellum. Chaetotaxy as in *conica*; scutellum with two laterals (posterior pair large and divergent), one decussate apical and a weak discal pair; postscutellum thinly pollinose; infrasquamal hairs absent; calypters tawny.

Abdomen shining black on broad hind margins of last three segments, basal segment without, second with one pair of large median marginal bristles; third and fourth each with a complete row of about 12; no discals; inner forceps united, slender on apical half, in profile slightly bowed forward at tip; penis simple, terminating in a short pale membrane; fifth sternite with a narrow deep incision, the lobes blackish.

Legs reddish black; claws and pulvilli moderately elongated.

Wings subhyaline; venation normal; third vein with hairs extending almost to small cross vein; apical cell open shortly before the wing tip; costal spine strong; epaulets red.

Female.—Front at vertex 0.292 of the head width (one specimen); third antennal segment very slender, four to five times longer than second; outer verticals not developed; two pairs of proclinate orbitals; fore tarsi rather slender, compressed and tapering outward, claws and pulvilli minute.

Length.—6.5 to 7.5 mm.

Remarks.—Redescribed from one male and one female in the United States National Museum from Miami, Fla., October 8 and 15 (C. H. T. Townsend).

(5) CERATOMYIELLA ORBITALIS, new species

Male.—Front at vertex 0.25 of the head width (one specimen), widening gradually downward to antennae; parafrontals gray pollinose to vertex, sparsely haired; median stripe reddish brown, as wide as one parafrontal except at antennae; one pair of weak orbitals present; outer verticals not developed; ocellars proclinate; frontal

bristles about seven in number, descending below middle of second antennal segment, uppermost pair reclinate, hardly larger than the next preceding ones in the row; face moderately receding, rather long and deeply excavated, its ridges not strongly divergent below, bare except one or two bristles above vibrissae, which are situated on the front edge of mouth; antennae as long as face, basal segment short, second wholly yellow, about one-fifth the length of third, which is blackish beyond the narrow base; arista brown, thickened on basal fourth, second segment short; parafacials gray pollinose, bearing a row of strong bristles along the inner margin, those in lower part of row larger than any of the frontals, a few hairs extending outside the large bristles on the lower extremity; cheek about two-fifths the eye height; palpi small, yellow, bearing two slender black hairs near tip; labella pale yellow, fleshy; eyes bare; back of head gray pollinose; thinly clothed with pale hairs.

Thorax and scutellum black, gray pollinose; mesonotum marked with four narrow black stripes; chaetotaxy as in *conica*; postscutellum normally developed; infrasquamal hairs absent; calypters white.

Abdomen black, subshining; the pollen gray, apparent on sides of first segment, thicker on the basal margins of last three and extending rather thinly past the middle on each; first segment with a weak pair of median marginals; second with one pair (broken off, scars indicating strong bristles); third and fourth each with a complete marginal row; no discals on anal segment.

Legs black, basal segments reddish; claws and pulvilli elongate.

Wings subhyaline; veins bare except third, which is setulose two-thirds of the distance to small cross vein; last section of fifth vein short; fourth vein with a broadly rounded bend, beyond slightly concave to costa; apical cell open just before the extreme wing tip; epaulets black; costal spine developed.

Length.—8 mm.

Female.—Unknown.

Type.—Male, U.S.N.M. no. 44759.

Remarks.—Described from one male in the United States National Museum from Hamonton, N.J., August 23, 1903; no collector's label.

Genus PARADIDYMA Brauer and Bergenstamm

Paradidyma BRAUER and BERGENSTAMM, Die Zweiflügler des kaiserlichen Museums zu Wien, no. 5, p. 382, 1891; no. 6, p. 184, 1893. (Genotype, *Didyma validinervis* Van der Wulp.)—COQUILLET, Revision of the Tachinidae of America, p. 126, 1897.—ALDRICH, Catalogue of North American Diptera, p. 474, 1905.

Atrophopoda TOWNSEND, Trans. Amer. Ent. Soc., vol. 18, p. 373, 1891 [Genotype, *A. singularis*, new species (female only)]; Smithsonian Misc. Coll., vol. 51, p. 66, 1908.

Lachnomma TOWNSEND, Trans. Amer. Ent. Soc., vol. 19, p. 103, 1892. [Genotype, *L. magnicornis*, new species (male only) = *Atrophopoda singularis* Townsend. I have examined the type specimen.]

Microchira BRAUER and BERGENSTAMM, Die Zweiflügler des kaiserlichen Museums zu Wien, no. 6, p. 188, 1893. [Genotype, *M. mexicana*, new species (male only) = *Paradidyma aperta* Brauer and Bergenstamm, loc. cit., p. 187.]

Lachnomopsis TOWNSEND, Proc. U.S. Nat. Mus., vol. 49, p. 421, 1915. [Genotype, *L. armata*, new species (male only).]

Phytoadmontia TOWNSEND, Proc. U.S. Nat. Mus., vol. 49, p. 626, 1916. (Genotype, *Admontia scitigera* Coquillett.)

In arranging the foregoing synonymy, I have examined all the type species involved. *Atrophopoda braueri* Williston, listed as a synonym of *Paradidyma* by Aldrich¹ and Coquillett,² does not come within the limits of the genus as restricted herein. I have examined a male type specimen in the Kansas University Museum. It has the eyes practically bare, and the first vein of the wing is setulose on almost the entire length. For this species Townsend³ established *Diaphoropeza*, which Coquillett² also placed in synonymy with *Paradidyma*. Under the rules of the International Code the genus is valid, although no description of the generic characters was given.

Generic characters (from the type species).—Eyes distinctly hairy. Front in male narrowed behind and rather prominent at base of antennae. Face receding, moderately excavated, its ridges normally divergent downward, in profile concave above mouth with the front edge of latter slightly prominent between vibrissae. Antennae inserted about on level with middle of eye, extending almost to oral margin, basal segments subequal in length in male. Second segment of arista short. Parafacial with a row of macrochaetae on the inner margin extending from lowermost frontal almost to lower edge of eye. Vibrissae situated on level with oral margin. Facial ridges bearing a few bristles and hairs above the vibrissae. Proboscis shorter than height of head, distal segment moderately slender, labella fleshy. Palpi normal in size, slender, tips hardly thickened. Frontal rows moderately divergent beneath base of antennae, extending to base of third segment. Ocellars present, proclinate. Orbitals absent in male. Cheek about one-half the eye height. Back of head densely pale haired, with a row of black hairs below the orbital fringe.

Thoracic chaetotaxy: Acrostichal, 2, 1 (postsutural pair well developed, situated in transverse line with posterior dorsocentral pair);

¹ A catalogue of North American Diptera. Smithsonian Misc. Coll., vol. 46, p. 474, 1905.

² The type-species of the North American genera of Diptera. Proc. U.S. Nat. Mus., vol. 37, p. 532, 1910.

³ Smithsonian Misc. Coll., vol. 51, no. 2, p. 64, 1908.

dorsocentral, 3, 3; humeral, 2; posthumeral, 1; presutural, 1; notopleural, 2; intraalar, 2; supraalar, 2; postalar, 2; hypopleural, 4 or 5; pteropleural, 1 (small); sternopleural, 2, 1 (lower anterior one small). Scutellum with two lateral, one decussate apical and a small discal pair. Postscutellum normally developed; infrascapular hairs present.

Abdomen without discal bristles on intermediate segments.

Legs rather long and slender, claws and pulvilli elongate in male.

Wings with first vein bare; third bristled nearly to small cross vein. Costal spine developed. Last section of fifth vein less than half as long as the preceding one. Hind cross vein oblique to fourth, which it joins a little nearer bend than small cross vein. Apical cell narrowly open, reaching costa well before extreme tip of wing.

KEY TO SPECIES OF PARADIDYMA

MALES

1. Apical cell closed and petiolate----- 2.
Apical cell open----- 4.
2. Mesonotum gray pollinose, the black stripes conspicuous and usually fused into a single broad pair, which extends to base of scutellum----- 3.
Mesonotum subshining, at most lightly dusted with pollen, the black stripes poorly defined or entirely obliterated behind suture; third antennal segment ordinary; arista thickened on basal two-fifths (Indiana, Illinois, Maryland, Virginia).
(23) *petiolata*, new species.
3. Last three abdominal segments with silvery bands on basal third, the remainder of these segments including the first shining black; third antennal segment entirely black (United States, widespread)----- (22) *singularis* (Townsend).
Pollen on abdomen not in defined basal bands, first segment conspicuously pollinose on the sides above, the second with pollen extending to hind margin; base of third antennal segment yellow to insertion of arista (Brazil).
(21) *brasiliانا*, new species.
4. Last section of fifth vein one-half the length of preceding section----- 5.
Last section of fifth vein distinctly less than one-half as long as preceding section----- 8.
5. Acrostichals only two pairs well developed before suture----- 6.
Three pairs of strong presutural acrostichal bristles; palpi brownish; abdomen almost wholly covered with gray pollen; fourth segment bearing a row of strong discal bristles (New Mexico)----- (8) *neomexicana*, new species.
6. Second antennal segment distinctly longer than first----- 7.
Basal segments of antennae subequal in length; pollen on thorax and abdomen tinged with brown; postsutural acrostichals one pair; calypters tawny (Mexico)-- (9) *derelicta*, new species.
7. Last three abdominal segments with defined silvery bands on basal fourth, the remainder of these segments including the first shining black; mesonotum thinly pollinose, subshining; palpi pale yellow; two sternopleural bristles (Utah).
(11) *retracta*, new species.

- Pollen on last three abdominal segments not in defined cross bands, the first pollinose on the sides; mesonotum covered with dense cinereous pollen, the black vittae very distinct behind suture; palpi brownish black; three sternopleurals (Utah)----- (10) *cinerescens*, new species.
8. Front narrowed behind the middle; orbital bristles absent----- 9.
 Front almost uniform in width to vertex; one pair of orbitals present; arista thickened on proximal three-fourths; palpi and second antennal segment yellow; verticals two pairs developed; fourth abdominal segment without discals (Peru).
 (24) *armata* (Townsend).
9. Sides of face bare below level of arista outside main row of bristles----- 11.
 Sides of face with hairs extending on lower half outside of parafacial row----- 10.
10. Bristles on lower half of face distinctly longer than those above and approximating the frontals in size; arista bare, thickened on proximal two-thirds; face strongly receding; palpi dark brown; small cross vein infuscated; epaulets black (Mexico, New Mexico)----- (12) *crassiseta*, new species.
 Parafacial bristles about equal in length throughout entire row, and less than half the size of frontals; arista pubescent, thickened hardly to middle; palpi pale yellow; abdomen wholly gray pollinose; wings hyaline; epaulets red (New Mexico) ----- (13) *aristalis*, new species.
11. Fourth abdominal segment with discal bristles above----- 12.
 Fourth abdominal segment without discals above; first segment bearing a pair of median marginals; front about one-half eye width; arista distinctly pubescent (Texas, North Carolina, Guatemala)----- (18) *apicalis*, new species.
12. First abdominal segment with a pair of median marginal bristles; arista pubescent; front narrow, 0.22 of head width; third antennal segment four times length of second (Mexico)----- (20) *validinervis* (Van der Wulp).
 First abdominal segment without median marginals; arista bare; front rather wide, about 0.29 of head width; third antennal segment six to seven times longer than second (United States, widespread)----- (19) *affinis*, new species.

FEMALES

1. Fore tarsal segments compressed and swollen, claws and pulvilli minute or atrophied----- 4.
 Fore tarsal segments ordinary, the claws and pulvilli well developed----- 2.
2. Last section of fifth vein one-half as long as preceding section----- 3.
 Last section of fifth vein about one-third length of preceding section; third antennal segment as wide as parafacial and three times length of second; abdomen thinly gray pollinose, subshining; costal spine longer than small cross vein; wings hyaline (California, Arizona)---- (6) *setigera* (Coquillett).
3. Abdomen shining black, last three segments with pollen in defined bands on basal fifth; palpi pale yellow; sternopleurals, 2; no infrascapular hairs; small species, length 4 mm (Idaho)----- (7) *obliqua*, new species.

- Abdomen wholly gray pollinose; palpi dark brown; sternopleurals, 3; infrascapular hairs present; larger species, length 8 mm----- (8) *neomexicana*, new species.
4. Sides of face bare below level of arista outside main row of bristles----- 5.
Sides of face outside main row of bristles with coarse black hairs extending almost to cheeks; pollen on head golden; abdomen wholly pollinose (Mexico).
(14) *aperta* Brauer and Bergenstamm.
5. Fourth abdominal segment with a row of discals extending across the top----- 9.
Fourth abdominal segment without median discal bristles above----- 6.
6. Outer verticals not developed----- 7.
Outer vertical bristles almost as large as inner ones; abdomen wholly gray pollinose; arista thickened beyond middle (Peru)----- (24) *armata* (Townsend).
7. Venter of abdomen clothed with only short black hairs----- 8.
Venter bearing long pale or whitish hairs; palpi black; wings strongly infuscated; antennae wholly black (Peru).
(17) *piliventris*, new species.
8. Arista thickened on proximal two-thirds, bare; third antennal segment yellow on basal half, five to six times longer than second; parafacial at narrowest part but slightly wider than third antennal segment; pollen on intermediate abdominal segments extending thinly to hind margin (Peru).
(16) *peruana* (Townsend).
Arista thickened at base, very slender on apical two-thirds, clothed with short hairs to tip; third antennal segment black, narrowed toward base, about two and one-half times length of second; intermediate abdominal segments with defined silvery bands on basal third (Central America, Vera Cruz)----- (15) *aldrichi*, new species.
9. Apical cell of wing closed and petiolate; outer vertical bristles absent----- 11.
Apical cell open; outer verticals nearly half as long as inner pair----- 10.
10. Epaulets reddish yellow; arista thickened on proximal fourth, distinctly short haired to tip; mesonotum covered with thick lusterless yellowish gray pollen, the dark stripes very inconspicuous and visible only in a flat rear view; abdomen largely pollinose, third and fourth segments at most subshining on narrow hind margins----- (18) *apicalis*, new species.
Epaulets black; arista thickened almost to middle, pubescent; mesonotum gray pollinose, the black stripes distinct, not interrupted at suture; last three abdominal segments shining black on apical half or more----- (19) *affinis*, new species.
11. Mesonotum subshining, lightly dusted with pollen, the dark stripes hardly apparent; arista thickened on basal fifth to fourth; abdomen black and shiny, basal fourth of segments 2 and 3 thinly gray pollinose at most----- (23) *petiolata*, new species.
Mesonotum densely gray pollinose and vittate, the black stripes usually fused into a single broad pair, which extends to base of scutellum; arista thickened about to middle; last three abdominal segments conspicuously pollinose on basal third to half----- (22) *singularis* (Townsend).

(6) PARADIDYMA SETIGERA (Coquillett)

Admontia setigera COQUILLET, Invertebrata Pacifica, vol. 1, p. 36, 1904.

Phytoadmontia setigera TOWNSEND, Proc. U. S. Nat. Mus., vol. 49, p. 626, 1916.

Female.—Closely resembles *P. obliqua*, from which it differs in the following characters: Front at extreme vertex 0.294 of the head width in one specimen; median stripe distinctly narrower than one parafrontal on entire length; outer verticals weakly developed; third antennal segment three times longer than second; cheek one-half the eye height. Thorax and scutellum densely gray pollinose; mesonotum marked with four black stripes, which are distinct behind suture; three sternopleural bristles. Abdomen subshining, the pollen gray and without definite pattern, in certain lights extending thinly to hind margin of last three segments, the first conspicuously pollinose above. Fore claws and pulvilli almost normal in size. Hind cross vein of wing not unusually oblique; last section of fifth vein one-third as long as preceding section; costal spine exceeding the length of small cross vein.

Length.—5.5 mm.

Male.—Unknown.

Type.—Female, in the United States National Museum, from California.

Remarks.—Redescribed from one female, East Verde River, Ariz., 4,500 feet; without collector's label.

Besides the type and the present specimen, kindly loaned me for study by Dr. J. M. Aldrich, no additional specimens have apparently been taken since the species was described 30 years ago.

(7) PARADIDYMA OBLIQUA, new species

Female.—Front at vertex 0.304 of the head width in one specimen measured; median stripe reddish brown, about equal the width of one parafrontal; ocellars small, proclinate; verticals broken off, but the scars indicating a good-sized inner pair; orbital bristles two, proclinate; frontals about five in number, extending about to middle of second antennal segment, uppermost bristle reclinate, rather short; parafrontals gray pollinose to vertex, almost devoid of hairs outside of frontal rows; face receding, moderately excavated, in profile concave above mouth, its ridges normally divergent, bearing only one or two bristly hairs next to vibrissae; the latter situated on oral margin but well above the lower edge of head; parafacials gray pollinose, bare outside of the main row of bristles, which extend along inner margin from lowest frontals to level with apex of third antennal segment; cheek sparsely haired on lower margin, gray pollinose, about two-fifths the eye height; antennae a little shorter than

face, third segment black, about as wide as parafacial below and only slightly more than twice the length of second which is yellow; arista blackish, thickened on about basal fourth, penultimate segment as wide as long; palpi pale yellow, slender; proboscis short, labella fleshy; eyes sparsely short haired; back of head gray pollinose, moderately clothed with pale hairs.

Thorax black, thinly gray pollinose; mesonotum with four black stripes obliterated behind suture where the surface is subshining in most views; scutellum black, almost shining but lightly dusted with uniform grayish pollen; chaetotaxy as in *validinervis*, but with only two sternopleural bristles; postscutellum normal; no infrascapular hairs; calypters white.

Abdomen black, rather broad and flat above; last three segments with silvery bands on basal fifth, the remainder of these segments including the first polished or shining; first segment without median marginals; second with one pair, small; third also with a median pair, a wide space intervening between these and the next ones situated near the sides of the segment; fourth bearing a row of rather strong discals besides a row of somewhat weaker **marginal bristles**; hairs on intermediate segments depressed.

Legs black, trochanters yellow, coxae less distinctly so; front tarsal segments not laterally compressed, the claws and pulvilli small but distinct.

Wings grayish hyaline; third vein bristly two-thirds the distance to small cross vein; hind cross vein unusually oblique to fourth, joining it nearer bend than small cross vein; apical section of fifth vein one-half the length of preceding section; fourth vein with a rounded obtuse stumpless bend, curving outward shortly beyond, thence almost straight to costa; apical cell very narrowly open shortly before extreme tip of wing; costal spine small.

Length.—4 mm.

Male.—Unknown.

Type.—Female, U.S.N.M. no. 44760.

Remarks.—Described from one female specimen in the United States National Museum, collected by W. Carter, labeled "*S. pestifer*, Salmon River Crossing, Idaho, August 31, 1927."

This species, like *P. setigera*, has almost normally developed fore tarsal claws and pulvilli, but differs in the more oblique hind cross vein and the extremely narrow pollen bands on last three abdominal segments. There are other minor differences.

(8) *PARADIDYMA NEOMEXICANA*, new species

Male.—Front before triangle 0.258 of the head width in the one specimen; parafrontals gray pollinose to vertex, clothed with moder-

ately long black hairs, which extend downward below base of antennae; frontals about six in number, descending almost to level with apex of second antennal segment, directed inward, the uppermost pair reclinate, not very long; ocellars strongly divergent, proclinate; orbitals absent; inner verticals strong, outer ones not developed; face gray pollinose, its ridges normally divergent downward, bare except a few bristly hairs above vibrissae, which are on a level with the protruding front edge of mouth; sides of face below base of third antennal segment without any hairs between the row of bristles and margin of eye; cheeks gray pollinose, sparsely haired below, about two-fifths the eye height; antennae black, third segment reddish near base, about four times the length of second; arista black, thickened to middle; palpi brown, bearing several long black hairs near tip; eyes distinctly hairy; back of head clothed with pale hairs.

Thorax and scutellum black, covered with dense gray pollen; mesonotum with four very distinct black stripes, outer pair interrupted at suture and stopping before base of scutellum; chaetotaxy as in *validinervis*, except that there are three pairs of well-developed acrostichal bristles before the suture; postscutellum normal, gray pollinose; one hair present on each side of postnotum beneath the calypters; the latter semitransparent, white.

Abdomen black, covered with gray changeable pollen, which in most views extends to the hind margins of last three segments; basal segment without median marginals; second with one pair; third bearing a marginal row, the intermediate bristles poorly developed; fourth with a discal and a marginal row of rather stout bristles; genital segments blackish, subshining.

Legs black; claws and pulvilli elongated; the latter dark or grayish in color.

Wings subhyaline; hind cross vein sinuous, oblique to fourth, joining it nearer bend than small cross vein; apical section of fifth vein one-half the length of preceding section; apical cell narrowly open well before tip of wing; third vein setulose as usual; costal spine developed; epaulets black.

Female.—Front at extreme vertex 0.291 of the head width (one specimen); two pairs of strong proclinate orbitals; outer verticals about half as large as inner pair; third antennal segment moderately wide to tip, about three and one-half times as long as second; fore tarsal segments normal, the claws and pulvilli distinctly developed.

Length.—Male, 7.5 mm; female, 8 mm.

Type.—Male, U.S.N.M. no. 44761.

Remarks.—Described from one male and one female, Las Vegas, N.Mex., July (Cockerell).

From the other forms having the hind cross vein retracted, the present species may be separated by the following characters: Male with three pairs of well-developed presutural acrostichals; female with distinct fore tarsal claws and pulvilli; and the abdomen more extensively pollinose in both sexes.

(9) PARADIDYMA DERELICTA, new species

Male.—Front narrowed before vertex, at narrowest part 0.238 of the head width in one specimen; parafrontals densely gray pollinose to vertex, sparsely haired outside of frontal rows; median stripe reddish brown, at antennae about as wide as one parafrontal, verticals one pair (inner) developed; frontals ordinary in size, uppermost bristle reclinate and hardly stouter than the preceding one; sides of face densely gray pollinose, bare outside the main row of bristles, which become longer and stouter downward; antennae black, third segment five times the length of second; arista thickened hardly to middle; palpi dark brown; cheek nearly one-half the eye height, thickly clothed with hairs on lower margin.

Thorax black, covered with gray pollen, which on the mesonotum has a brownish sheen in certain lights; dorsal vittae four, outer pair interrupted at the suture; scutellum black, grayish pollinose; calypters tawny.

Abdomen black; pollen on intermediate segments with a brownish tinge apparent in most views; narrow hind margin of third and apical half of fourth segment subshining; first segment without median marginals; second with one pair; third bearing a marginal row of about eight; fourth with a row of discals, which are obviously stouter than the marginals; genital segments black.

Legs black; pulvilli tawny.

Wings grayish hyaline; hind cross vein noticeably retracted and sinuous; last section of fifth vein one-half as long as the preceding section; third vein setulose almost to small cross vein; apical cell narrowly open, reaching costa well before extreme wing tip; costal spine developed; epaulets black.

Length.—7 mm.

Female.—Unknown.

Type.—Male, U.S.N.M. no. 44762.

Remarks.—Described from one male in the United States National Museum taken at Mound Valley, Chihuahua, Mexico, August 23, 1909, by Dr. C. H. T. Townsend.

Differs from *P. validinervis*, which it closely resembles, in the absence of median marginals on first abdominal segment, and in having the hind cross vein of wing noticeably retracted. There are other minor differences.

(10) *PARADIDYMA CINERESCENS*, new species

Male.—Very closely resembles *P. derelicta*, from which it differs in the following characters: Front at narrowest part (before vertex) 0.263 of the head width in one specimen measured; second antennal segment distinctly longer than first and nearly one-fourth the length of third; cheeks clothed with sparse black hairs on lower half; palpi brownish black. Thorax and scutellum covered with dull cinereous pollen; postscutellum membranous above; calypters white. Abdomen subshining, lightly sprinkled with gray pollen, which in most views extends to the hind margins of last three segments. Pulvilli grayish, about as long as last tarsal segment.

Length.—6 mm.

Female.—Unknown.

Type.—Male, U.S.N.M. no. 44763.

Remarks.—One male, Promontory Point, Utah, August 5, 1929 (G. F. Knowlton).

The species has a general pale-gray appearance, in contrast with the decidedly blacker aspect of *P. derelicta*, to which it is closely allied. The slight structural differences are mentioned in the key.

(11) *PARADIDYMA RETRACTA*, new species

Hind cross vein noticeably retracted; last section of fifth vein more than half the length of preceding; apical cell open; sternopleurals two; last three abdominal segments shining black on apical three-fourths or more.

Male.—Front at vertex 0.228 of the head width in one specimen measured, hardly widened to middle, and not very prominent at antennae; cheeks, face, and sides of front gray pollinose; median stripe brownish, as wide as one parafrontal on entire length; ocellars proclinate; inner verticals developed; frontals extending about to apex of second antennal segment, uppermost pair rather weak, reclinate; antennae nearly as long as face, black, second segment reddish, one-fourth the length of third; arista blackish, thickened on proximal two-fifths; facial ridges strongly diverging downward, bare except a few hairs next to vibrissae, which are situated on oral margin; parafacials bare outside of the main row of bristles; cheeks sparsely black haired below, about two-fifths the eye height; palpi pale yellow; eyes hairy; beard white.

Thorax black, gray pollinose; mesonotum marked with four distinct black vittae; scutellum black, subshining, lightly dusted with changeable gray pollen; infrascapular hairs absent; calypters semi-transparent, white; postscutellum normally developed.

Abdomen mostly shining black, with silvery basal bands on last three segments, which in a favorable angle extend at most over the

basal third of intermediate segments; first segment bearing a very slender or hairlike pair of median marginals; second with a well-developed pair; third bearing a marginal row of about six with a wide space between the median pair and the lateral one; fourth with a row of strong discals besides the usual marginal row; genital segments shining black, retracted; fifth sternite black, the lobes prominent, narrowly and deeply incised.

Legs slender, black; claws and pulvilli nearly as long as the apical tarsal segment.

Wings subhyaline; hind cross vein very oblique to fourth, which it joins almost midway between bend and small cross vein; apical cell narrowly open well before the tip of wing; third vein setulose three-fourths the distance to small cross vein; costal spine small; epaulets black.

Length.—6 mm.

Female.—Unknown.

Type.—Male, U.S.N.M. no. 44764.

Remarks.—Described from one male specimen taken at Smithfield, Utah, August 24, 1925, by G. F. Knowlton.

The narrower front, retracted hind cross vein, two sternopleural bristles, and the more defined and narrower pollen bands on last three abdominal segments distinguish the species from *affinis*, described herein. The two species agree in most other essential characters.

(12) PARADIDYMA CRASSISETA, new species

Male.—Front at vertex 0.23 and 0.21 of the head width in two specimens, very prominent at antennae; face strongly receding, its ridges rather flattened below, bearing bristly hairs and one or two strong macrochaetae next to vibrissae; parafrontals black, covered with reflecting grayish pollen, narrow on upper part behind middle; median stripe red, wider than one parafrontal except at antennae; frontals six to eight in number, directed inward, the uppermost nearly erect, not longer than preceding pair; orbitals absent; inner verticals strong, outer ones not developed; ocellars ordinary in size, proclinate; antennae black, about as long as face; first segment extending considerably above the front and as long as the second; third segment unusually broad to tip and about equal the width of para-facial at narrowest part, six to seven times as long as the second segment; arista black, thickened on proximal two-thirds, second segment short; para-facials black, the pollen dark gray with a distinct luster, clothed with black hairs outside the row of bristles, which become successively longer and stronger downward; palpi dark brown; cheek one-half the eye height; eyes distinctly hairy; beard white.

Thorax and scutellum black, gray pollinose; mesonotum marked with four black stripes in front and five behind suture, outer pair stopping before base of scutellum; infrasquamal hairs present, calypters white.

Abdomen black, all segments with gray pollen, which in some views extends thinly past the middle of the last three; basal segments each with a pair of median marginals (smaller on the first); third with a marginal row of 10 to 12; fourth bearing a complete row of discals as large as those in the marginal row; genital segments black, retracted.

Legs black, reddish near base; claws and pulvilli longer than apical tarsal segment; hind tibia with a row of uneven wide-spaced bristles on outer posterior edge.

Wings with a brownish tinge on the anterior margin, small cross vein infuscated; venation normal; third vein setulose two-thirds the distance to small cross vein; apical cell open well before exact wing tip; epaulets blackish; costal spine ordinary in size.

Length.—9 mm.

Female.—Unknown.

Type.—Male, U.S.N.M. no. 44765.

Remarks.—Described from two male specimens in the United States National Museum: One (the type) labeled Sanchez, Chihuahua, Mexico, September 2, 1909 (C. H. T. Townsend); the other, Las Vegas, New Mexico, August 19, 1901 (H. S. Barber).

The prominent front, more strongly receding face, longer and broader third antennal segment, and haired parafacials readily separate the species from *P. develicta*, to which it is closely related. Another difference is the presence of median marginals on the first abdominal segment.

(13) *PARADIDYMA ARISTALIS*, new species

Arista densely pubescent; parafacial bristles uniform in length downward, smaller than usual; sides of face cinereous, with black hairs extending below middle outside of the main row of bristles; mesonotum with four black stripes in front and five behind suture.

Male.—Front at vertex 0.26 of the head width (one specimen), rather prominent at antennae; parafrontals cinereous pollinose to vertex, rather sparsely clothed with short black hairs and considerably widened before middle; median stripe reddish brown, slightly narrowed behind; inner verticals large; ocellars proclinate; orbitals absent; frontals about six in the row, the lowermost nearly on level with apex of second antennal segment; face receding, moderately deep, and concave above the mouth; vibrissae large, on level with oral margin; facial ridges divergent downward, bearing a few bristly

hairs on lower extremity; cheek bare above the lower margin, gray pollinose, about two-fifths the eye height; antennae as long as face, first segment rather prominently elevated above the front, third segment about five times longer than second; arista black, thickened nearly to middle, proximal segments short but distinct; palpi slender, pale yellow; beard white; eyes distinctly hairy.

Thorax and scutellum black, densely gray pollinose; three pairs of acrostichal bristles behind the suture, the median ones very weak or hairlike; other details of chaetotaxy as in *validinervis*; infra-squamal hairs present; postscutellum gray pollinose, membranous above; calypters semitransparent, white.

Abdomen black, wholly gray pollinose; first segment without median marginals; second with a stout closely spaced pair; third with a marginal row of about 10; fourth bearing a complete row of good-sized discals, besides a row of still larger marginals; genital segments reddish black, lightly pollinose, fifth sternite deeply divided, the lobes blackish, clothed with fine hairs.

Legs mostly black, the basal segments and the hind tibiae obviously reddish (front pair missing); claws and pulvilli elongate.

Wings subhyaline; venation normal; apical cell open well before tip of wing; costal spine large; epaulets red.

Length.—8.5 mm.

Female.—Unknown.

Type.—Male, U.S.N.M. no. 44766.

Remarks.—Described from one male labeled "Animas Park, N.Mex., 6,500 feet (Townsend)."

(14) *PARADIDYMA APERTA* Brauer and Bergenstamm

Paradidyma aperta BRAUER and BERGENSTAMM. Die Zweiflügler des kaiserlichen Museums zu Wien, no. 6, p. 187, 1893.

Microchira mexicana BRAUER and BERGENSTAMM, *Ibid.*, p. 188.

Readily distinguished from all other known species by the golden pollen on the head. I have not seen any male specimens.

Female.—Front at extreme vertex 0.312 of the head width (one specimen); pollen deep golden-yellow on parafrontals, parafacials, cheeks, and posterior orbits; face yellowish gray; outer verticals about half the size of inner ones; orbitals, two pairs; ocellars proclinate; frontals extending to apex of second antennal segment, directed inward, except the uppermost, which is reclinate; parafacial on narrowest part about one-half the width of facial depression, bearing a row of rather weak bristles and with black hairs on entire length outside the main row; vibrissae situated on front edge of mouth; facial ridges with one or two bristles and fine hairs next to vibrissae; cheek fully one-half the eye height; palpi yellow;

antennae shorter than face, mostly black, third segment rather slender and about two and one-half times the length of second; arista black, thickened on basal fourth, clothed with short hairs, penultimate segment short; eyes distinctly hairy; back of head gray pollinose, moderately pale haired below.

Thorax and scutellum black, gray pollinose; mesonotum with four distinct black stripes before the suture and five behind, the outer pair not interrupted at middle and stopping well in front of scutellum; acrostichals, 3, 3 (first two behind suture small); postscutellum normally developed, gray pollinose; infrasquamal hairs present; calypters white with yellow margins.

Abdomen broadly ovate, black, wholly covered with thick yellowish-gray pollen; first segment without median marginals; second with a closely spaced pair; third bearing a marginal row of about eight; fourth with a discal row well behind the middle besides a marginal row of weaker bristles.

Legs black, trochanters red; front legs with the tarsal segments laterally compressed and swollen, claws and pulvilli minute; mid tibia with one strong bristle on outer front side near middle; hind tibia with a scattering row of uneven bristles on outer posterior edge.

Wings grayish hyaline; venation normal; third vein bristly two-thirds the distance to small cross vein; apical cell open far before tip of wing; costal spine long; epaulets red.

Length.—10 mm.

Remarks.—Redescribed from one female specimen in the United States National Museum, Atzacopozalco, D. F., Mexico, August 31, 1922 (E. G. Smyth).

(15) *PARADIDYMA ALDRICHI*, new species

Female.—Front at extreme vertex 0.25 to 0.27 of the head width in three specimens measured; parafrontals black, thinly gray pollinose; median stripe reddish brown, about equal the width of one parafrontal on entire length; the usual two proclinate orbitals present; ocellars rather weak, proclinate; inner verticals large, outer ones not developed; frontals about five in the row, descending to middle of second antennal segment, uppermost one stouter and reclinate; antennae somewhat shorter than face, third segment black, rather narrow at base and about two and one-half times longer than the second, which is largely yellow; arista brown, thickened at base and very slender on apical two-thirds, clothed with short hairs to tip, second segment short; face moderately excavated, hardly receding but concave above mouth in profile, its ridges bearing a few bristly hairs next to vibrissae, which are situated on oral

margin; parafacials blackish, covered with feebly shining gray pollen, bare below arista, except a row of weak bristles along inner margin which are reduced in size to small hairs on the upper part; palpi yellow, slender to tip; cheek one-third to two-fifths the eye height; eyes sparsely short haired; back of head gray pollinose, moderately clothed with whitish hairs.

Thorax black, gray pollinose; mesonotum with four black stripes, which are sometimes indistinctly separated behind the suture; scutellum black, lightly sprinkled with changeable gray pollen, post-scutellum normal, thinly pollinose; infrasquamal hairs absent in two specimens and three hairs present in the other; calypters pale yellowish white.

Abdomen shining black; intermediate segments with silvery bands on basal third, the fourth thinly pollinose almost to apex; first segment without median marginal bristles; second with one pair; third and fourth each bearing a marginal row; fourth without discals, the broad basal margin above destitute of hairs.

Legs black; front tarsi compressed and swollen, the claws and pulvilli very minute.

Wings brown, paler on the posterior margin; apical cell open shortly before wing tip; venation normal; third vein setulose half to three-fourths the distance to small cross vein; costal spine longer than small cross vein; epaulets black.

Length.—7 mm.

Male.—Unknown.

Type.—Female, U.S.N.M. no. 44767.

Remarks.—Described from three female specimens in the United States National Museum as follows: 1 (the type), taken at Ingenio R.R. Station, Guatemala, April 28, 1926, by Dr. J. M. Aldrich, in whose honor the species is named; 1, labeled San Rafael, Vera Cruz (C. H. T. Townsend), and the other, Higuito, San Mateo, Costa Rica (Pablo Schild).

The species has the eyes less distinctly haired and smaller parafacial bristles than any other member of the genus. It is provisionally included here. The accumulation of better preserved specimens, including the male sex, seems necessary to decide the question of proper generic allocation. The relationship with *Ceratomyiella* seems close, but the type species of that genus has the eyes entirely bare.

(16) *PARADIDYMA PERUANA* (Townsend)

Diaphoropeza peruana TOWNSEND, Proc. U. S. Nat. Mus., vol. 43, p. 308, 1912.

Very similar to *P. singularis*, from which it differs in the following characters:

Female.—Front rather narrow, at extreme vertex 0.26 of the head width (one specimen); parafacial at narrowest about as wide as third antennal segment; cheek barely one-third the eye height. Infrascapular hairs present; calypters with rims pale tawny. Abdomen without defined silvery basal bands on last three segments; first thinly gray pollinose above and on sides; intermediate segments with the pollen extending thinly beyond the middle when viewed from behind; anal segment almost entirely gray pollinose, without discal bristles; venter largely covered with gray pollen. Legs brownish black. Wings with a distinctly yellow tinge on costal margin and along the veins, hind margins grayish hyaline; apical cell closed at costa, not petiolate; costal spine about as long as small cross vein; epaulets reddish black.

Length.—7.5 mm.

Male.—Unknown.

Type.—Female, U.S.N.M. no. 15147.

Remarks.—Redescribed from one paratype female from Sullana, Peru, October 1, 1910, TD 3942 (C. H. T. Townsend). In the United States National Museum there are three additional female type specimens from the same locality and one female from Piura, Peru, all collected by Dr. C. H. T. Townsend.

The narrower cheeks and parafacials and the absence of discal bristles on the fourth abdominal segment readily separate the species from *P. singularis*.

(17) *PARADIDYMA PILIVENTRIS*, new species

Distinguished from all others of this group by the presence of pale hairs on venter of abdomen.

Female.—Front at vertex 0.29 and 0.27 of the head width in the two specimens; parafrontals black, thinly gray pollinose, with more numerous black hairs on the lower part extending on the parafacials about to level with arista; outer verticals not developed; ocellars proclinate; orbitals two proclinate pairs; frontals about six in number, distinctly larger than parafacial bristles, uppermost pair rather stout and reclinate, the others directed inward descending below middle of second antennal segment; face blackish, gray pollinose, moderately receding and concave above mouth in profile; facial ridges not very prominent, bearing bristly hairs on about the lowest fourth; parafacials largely black, covered with satiny gray pollen, a row of bristles along the reddish inner margin, outside of these bare on lower half; antennae shorter than face, wholly black, third segment narrowed toward base and about two and one-half times the length of second; arista black, thickened on proximal fourth, basal segments short; vibrissae near the front edge of the mouth; cheeks two-fifths the eye height; eyes distinctly hairy; palpi black, bearing several

long pale hairs on under side near the tip; back of head blackish, thinly gray pollinose, rather sparsely clothed with pale hairs.

Thorax and scutellum black, dusted with gray pollen; mesonotum marked with four black vittae, outer pair not interrupted at suture; chaetotaxy as in *validinervis*; infrascapular hairs absent; postscutellum normal; calypters pale yellowish white.

Abdomen black and shiny; last three segments with dense grayish-white pollen bands, which are wider on the sides of the intermediate segments and narrowed at the middle above, especially on the second where the pollen is confined on the basal margin; first segment without median marginals; second with one pair; third and fourth each bearing a marginal row of about 10; fourth segment without discal bristles; venter pale haired.

Legs black, basal segments reddish; front tarsal segments swollen, the claws and pulvilli minute or atrophied; hind tibia with three large and several small bristles on outer posterior edge.

Wings infuscated, a little paler along the hind border; venation normal; third vein with hairs extending almost to small cross vein; apical cell open shortly before wing tip; costal spine strong; epaulets black.

Length.—7 mm.

Male.—Unknown.

Type.—Female, U.S.N.M. no. 44768.

Remarks.—Described from two females in the United States National Museum, collected at Huariaca, Peru, December, 1921, by Dr. C. H. T. Townsend.

(18) PARADIDYMA APICALIS, new species

Male.—Front at vertex 0.258 of the head width (average of five: 0.24; 0.26; 0.26; 0.27; 0.26), hardly wider to middle, thence diverging to antennae where it is rather prominent in profile; median stripe reddish brown, nearly as wide as one parafrontal on most of its length; ocellars present; verticals one pair (inner) developed; orbitals absent; frontals five or six in number, the rows moderately divergent beneath antennae extending to apex of second segment, uppermost bristle stouter, reclinate; parafrontals covered with dull gray pollen to vertex, moderately clothed with rather coarse black hairs; face receding and concave above the mouth in profile, its ridges not very prominent, haired on lower fourth or less; parafacials densely gray pollinose, a row of bristles along the inner margin becoming longer and stronger downward, the largest approximating the frontals in size, bare outside the main row of bristles below level of arista; vibrissae situated on oral margin; antennae about as long as face, basal segments subequal in length,

third black, five or six times longer than second which is largely yellow; arista blackish, finely pubescent, thickened on proximal two-fifths, basal segments short; palpi slender, pale yellow, bearing a few long black hairs beneath on apical half; cheek bare above lower margin, gray pollinose, clothed with pale hairs; eyes distinctly hairy.

Thorax and scutellum black, covered with thick gray pollen; mesonotum with four narrow dark stripes, often poorly defined, interrupted at suture and stopping far before base of scutellum; two or three acrostichal bristles usually developed behind the suture, other details of chaetotaxy as in *validinervis*; postscutellum thinly pollinose and membranous above; infrasquamal hairs present; calypters semitransparent, white with a tawny tinge.

Abdomen black, largely gray pollinose; hind margins of last three segments black and subshining when viewed from above, but pollinose or subpollinose in most other views, first segment with conspicuous pollen on the sides above; one pair of median marginal bristles present on first and second segments, the third and fourth each with a marginal row, no discals on dorsal surface of fourth segment; genital segments small, black, retracted; inner forceps united, slender, clothed with brownish hairs behind near base, flattened and shining beyond middle, apex minutely notched; outer forceps shorter than inner ones, tapering uniformly to a blunt tip, tinged with yellow; penis simple, short, blackish, apex bearing a short pale membrane.

Legs black, basal segments and knees yellowish; mid tibia with a whorl of three bristles near middle, the one on outer front side stout; hind tibia with a scattering row of irregular bristles on outer posterior edge; claws and pulvilli elongate.

Wings subhyaline; veins yellow, bare except third, which has hairs extending almost to small cross vein; fourth vein with a rounded almost rectangular stumpless bend, beyond rather deeply concave to costa; last section of fifth vein about one-fourth as long as preceding section; apical cell open well before the wing tip; costal spine strong; epaulets red.

Female.—Front at vertex 0.282 of the head width (average of five: 0.28; 0.28; 0.28; 0.31; 0.26); pollen on parafrontals, mesonotum and abdomen with a distinct pale brassy tinge; outer verticals developed, orbitals two pairs; antennae shorter than face, third segment slender, yellow at base, about four times the length of second; arista short haired to the tip; first abdominal segment without median marginals, the fourth with discals above; fore tarsal segments compressed and swollen, claws and pulvilli atrophied.

Length.—6 to 8 mm.

Type.—Male, U.S.N.M. no. 44769, from College Station, Tex.

Remarks.—Described from 14 males and 11 females in my collection. All taken at College Station, Tex., September–November 1920–1933 (H. J. Reinhard), and one male from Hidalgo County, Tex., May 18, 1932 (S. W. Clark). In the United States National Museum, one female from La Providencia, Obispo, Guatemala (C. M. Rouillard).

(19) PARADIDYMA AFFINIS, new species

Male.—Front at vertex 0.288 of the head width (average of five: 0.29; 0.28; 0.29; 0.29; 0.29), hardly widening to middle thence rapidly so to antennae where it is moderately prominent; parafrontals gray pollinose to vertex, moderately clothed with rather coarse black hairs outside the frontal bristles; median stripe red, occupying about one-third the frontal width; inner verticals large, outer pair not developed; orbitals absent; frontal bristles extending below middle of second antennal segment, uppermost one reclinate; ocellars present, proclinate; antennae about as long as face, basal segments subequal in length, third segment black, six or seven times longer than second which is largely yellow; arista black, thickened about to middle, finely pubescent, second segment short; face gray pollinose, moderately excavated, receding with the lower border slightly prominent between vibrissae; facial ridges weakly divergent downward, bearing a few bristly hairs next to vibrissae, which are situated on the oral margin; palpi slender, pale yellow, with several long black hairs on lower edge beyond the middle; parafacial gray pollinose, bare except a row of bristles along the inner margin, those in lower part of row approximating the frontals in size; cheek reddish in ground color, thinly gray pollinose and bare above, about two-fifths the eye height; eyes distinctly haired; back of head densely gray pollinose and thickly clothed with pale or whitish hairs.

Thorax black, gray pollinose; mesonotum marked with four narrow black stripes, which are not very conspicuous especially behind the suture; scutellum black, covered with dull gray pollen, which is thinner on middle of disk; chaetotaxy as in *validinervis* but with three postsutural acrostichals usually present; postscutellum normal, thinly pollinose; sides of postnotum beneath calypters bearing a tuft of small black hairs; calypters semitransparent, white.

Abdomen black, dusted with gray pollen, which in certain views extends thinly behind the middle on the intermediate segments; viewed from above the first segment pollinose on sides and the three following ones shining black on posterior third to half; first segment without median marginals; second with one pair; third bearing a marginal row of 10 to 12; fourth with a discal and a marginal

row of stronger bristles; genitalia as in *P. singularis*, but the outer forceps more broadly rounded at the apex.

Legs rather slender, black; claws and pulvilli elongated.

Wings grayish hyaline; venation bare except third vein, which is setulose almost to small cross vein; fourth vein with a rounded stumpless bend and broadly concave beyond to costa; last section of fifth vein about one-fourth the length of preceding section; apical cell narrowly open far before wing tip; costal spine strong; epaulets black.

Female.—Front at vertex 0.288 of the head width (five measured as follows: 0.3; 0.27; 0.29; 0.28; 0.3); outer verticals developed but smaller than inner ones; orbitals two proclinate pairs; antennae shorter than face, third segment slender, four to five times the length of second; first abdominal segment usually without median marginal bristles (two specimens with a pair present); front tarsi laterally compressed and swollen, the claws and pulvilli minute or atrophied.

Length.—5.5 to 9.5 mm.

Type.—Male, U.S.N.M. no. 44770, from College Station, Tex.

Remarks.—Described from 50 specimens. In the United States National Museum: 2 males, Knoxville, Tenn., May 25 (J. M. Aldrich); 1 male, Birmingham, Ala., June 4, 1917 (J. M. Aldrich); 1 female, Lafayette, Ind., September 12, 1918 (J. M. Aldrich); 1 female, Riley County, Kans., May 29 (Popenoe); 1 female, Manhattan, Kans., May 30, 1928 (R. C. Smith); 1 female, labeled "Ga." without additional data; 1 male and 1 female, Clemson College, S.C., October 10, 1908 (C. H. T. Townsend); 1 female, Holly Springs, Miss., September 7, 1890 (F. W. Mally); 1 male, Miami, Fla., September 6 (C. H. T. Townsend); 1 female, Washington, D.C., September 18, 1921 (J. M. Aldrich); 1 female, Rock Creek, D.C., flowers chrysanthemum, May 30, 1917 (C. H. T. Townsend); 1 male, Eastern Branch near Bennings, D.C., August 29, 1915 (W. L. McAtee); 1 male, Washington, D.C., June 27 (Townsend); 1 female, Washington, D.C., October 2, 1917 (W. L. McAtee); 1 female, Anacostia, D.C., September 24, 1914 (R. C. Shannon); 1 female, at light, Plummers Island, Md., September 2, 1914 (R. C. Shannon); 1 female, Chesapeake Beach, Md., October 14, 1926 (J. M. Aldrich); 1 female, Arlington, Va., October 6, 1913 (R. H. Hutchison); 1 male, Lincoln, Nebr., July 7, 1922 (O. C. Bradbury); 1 female, Marfa, Tex., June 13, 1917 (J. M. Aldrich); 1 female, Raleigh, N.C. (C. S. Brimley). In the Kansas University Museum: 1 male, Las Cruces, N.Mex., September 25, no collector's label. In my collection: 9 males and 16 females, College Station, Tex., April to October, 1917–1930 (H. J. Reinhard). In the collection of D. G. Hall, 1 female, Manhattan, Kans., May 10, 1929 (D. G. Hall).

In the material examined I have noted but one specimen (female) having the first posterior cell closed and short petiolate. In *singularis* the first posterior cell is invariably closed and usually short petiolate. Other differences may be noted in the present species: Four narrow thoracic stripes; fourth abdominal segment with discals above in male; outer verticals present in female.

(20) PARADIDYMA VALIDINERVIS (Van der Wulp)

Didyma validinervis VAN DER WULP, Biologia Centrali-Americana, Diptera, vol. 2, p. 164, 1890.

Paradidyma validinervis BRAUER and BERGENSTAMM, Die Zweiflügler des kaiserlichen Museums zu Wien, no. 5, p. 404, 1891; no. 6, p. 127, 1893.

Besides the characters mentioned in the generic description, the type species has the following additional characters:

Male.—Front narrowed before vertex, at narrowest part 0.22 of the head width in one specimen; parafrontals covered with dense gray pollen to vertex, sparsely clothed with hairs outside of frontal rows; median stripe reddish brown, at middle wider than one parafrontal; inner verticals developed; frontals ordinary in size, the uppermost bristle subreclinate and hardly stouter than the preceding one; parafacials densely gray pollinose, bare below level of arista outside of the main bristles, which increase in size downward in the row; antennae black, third segment about four times the length of second; arista pubescent, thickened about on proximal half; palpi dark brown; cheek clothed with black hairs on lower margin, about two-fifths the eye height; eyes hairy.

Thorax black, gray pollinose; mesonotum marked with four black stripes, outer pair interrupted at suture; scutellum black, thinly gray pollinose; calypters whitish, the hind lobe translucent and with a slight brownish tinge.

Abdomen black; segments two to four shining beyond the basal silvery band, only the second showing thin pollen more extensively in a flat rear view; basal segments each with a pair of median marginals; third bearing a marginal row of six, large; fourth with a row of six discals, which are slightly stouter than the marginals; genital segments black.

Legs black; claws and pulvilli elongate.

Wings grayish hyaline; first vein bare, third setulose almost to small cross vein; apical cell narrowly open; last section of fifth vein less than half as long as preceding section; costal spine developed.

Length.—7 mm.

Remarks.—Redescribed from one cotype male specimen in the United States National Museum from Guerrero, Mexico. I have not seen any specimens of the female.

(21) *PARADIDYMA BRASILIANA*, new species

Male.—Front moderately wide, at vertex 0.29 of the head width in one specimen; parafrontals covered with gray pollen tinged with yellow along the inner margins; parafacials, cheeks, and posterior orbits cinereous; third antennal segment largely black, the base yellow to the insertion of the arista. Sides of postnotum beneath calypters with a few small inconspicuous hairs. Abdomen slender, tapering to a rather narrow apex; first segment conspicuously gray pollinose on the sides above, second almost entirely covered with changeable gray pollen, third and fourth shining black on apical third to half; genital segments black, small and retracted. Otherwise as in *P. singularis*.

Length.—7 mm.

Female.—Unknown.

Type.—Male, U.S.N.M. no. 44771.

Remarks.—Described from one male specimen collected at Itaquaquecetuba, Sao Paulo, Brazil, September 26, by Dr. C. H. T. Townsend.

I am unable to note any structural differences between the present species and *P. singularis*; both have the third antennal segment strikingly elongated with the anterior margin concave below the insertion of the arista. The rather slight characters separating the species are mentioned above and in the key. A second closely related species is *P. peruana*, known only in the female: it differs from *brasiliana* in having the cheeks distinctly narrower, the wings and calypters obviously tinged with yellow, and apical cell barely closed at costa.

(22) *PARADIDYMA SINGULARIS* (Townsend)

Atrophopoda singularis TOWNSEND, Trans. Amer. Ent. Soc., vol. 18, p. 373, 1891.

Lachnomma magnicornis TOWNSEND, Trans. Amer. Ent. Soc., vol. 19, p. 103, 1892.

Paradidyma singularis COQUILLET, Revision of the Tachinidae of America, p. 126, 1897.—ALDRICH, Catalogue of North American Diptera, p. 174, 1905.

Male.—Front at vertex 0.306 of the head width (five measured as follows: 0.31; 0.31; 0.3; 0.3; 0.31), rather prominent at antennae; parafrontals, parafacials, and cheeks cinereous pollinose; face long and deeply excavated, its ridges weakly divergent downward, bearing a few bristles and hairs on lower extremity; antennae strikingly elongate, first segment longer than second and extending considerably above level of the front, third segment black, about equal the length of face with the front edge concave below insertion of arista; the latter thickened on proximal three-fourths; cheek two-fifths the eye height; parafacial bare outside the main row of bristles; palpi yellow: eyes distinctly hairy.

Thorax black; mesonotum densely gray pollinose, the black stripes usually fused into a single broad pair, which extends to base of scutellum; chaetotaxy as in *validinervis*; sides of postnotum beneath calypters usually bare but sometimes with a few small hairs present; calypters white.

Abdomen black; last three segments with silvery bands on basal third, remainder of these segments including the first polished or shining; basal segment without median marginal bristles; second with one pair; third and fourth each with a marginal row, the fourth occasionally with one or two discals on the sides but none at middle above; genital segments blackish, retracted; inner forceps black, with a slight median keel behind, moderately broad at base, the apical half narrowed terminating in an acutely tipped shining beak; outer forceps yellow, slightly shorter than inner ones, the sides bulged and clothed with short brownish hairs, tips blunt; fifth sternite with a narrow deep incision, the lobes black.

Legs black; claws and pulvilli elongate.

Wings grayish hyaline; third vein with hairs extending almost to small cross vein; last section of fifth vein one-third the length of preceding section; apical cell closed and usually short petiolate; costal spine well developed.

Female.—Front at vertex 0.328 of the head width (average of five: 0.35; 0.32; 0.35; 0.31; 0.31); the usual two pairs of proclinate orbitals present; outer verticals not developed; antennae shorter than face, third segment slender, about one-half as wide as parafacial and four or five times longer than second; cheek two-fifths the eye height; fourth abdominal segment with a row of discals behind the middle above; fore tarsi compressed, the claws and pulvilli atrophied.

Length.—5.5 to 8.5 mm.

Remarks.—Redescribed from a long series of both sexes from all sections of the United States, including the type male of *Lachnomma magnicornis* Townsend, in the Kansas University Museum.

A common North American species described from Carlinville, Ill. Readily distinguished from most other members of the genus by the two broad black thoracic stripes, which in well-preserved specimens are sharply contrasted on entire length by a median and lateral pale gray pollen bands. *Catemophrys sequens* Townsend presents about the same general appearance but can readily be separated by its bare eyes and parafacials.

(23) PARADIDYMA PETIOLATA, new species

Mesonotum subshining, the vittae poorly defined; arista thickened on proximal half or less; apical cell closed, the petiole about twice the length of small cross vein.

Male.—Front 0.252 of the head width (average of five: 0.26; 0.25; 0.25; 0.25; 0.25), hardly widening to middle, thence rapidly so downward; parafrontals thinly gray pollinose often blackish before vertex, clothed with sparse short hairs; median stripe reddish brown, hardly narrowed behind and extending on each side of triangle to vertex; inner verticals moderately strong, directed posteriorly, outer pair vestigial; ocellar bristles small, proclinate, divergent; orbitals absent; frontal bristles about five in each row, descending to level with apex of second antennal segment, uppermost pair reclinate, the others directed inward; face rather long and receding, deeply excavated, ground color black, gray pollinose, its ridges bare except a few bristly hairs above vibrissae; parafacial covered with shining gray or almost silvery pollen, bearing a row of bristles along the inner margin which become longer and stouter downward; vibrissae situated on level with front edge of mouth; antennae as long as face; third segment black, with the anterior edge practically straight, about seven times the length of second; basal segments tinged with red, the first longer than second and extending well above the level of the front; arista slightly shorter than third antennal segment, black, thickened on proximal two-fifths, basal segments short but distinct; cheek about two-fifths the eye height; proboscis short, labella fleshy; palpi slender, hardly thickened apically, yellow; eyes distinctly hairy; beard white.

Thorax black, thinly dusted with gray pollen; mesonotum subshining, the vittae poorly defined; chaetotaxy as in *validinervis*, except that there are usually three pairs of acrostichals before the suture; scutellum black, subshining; infrasquamal hairs present; postscutellum normally developed; calypters white.

Abdomen shining black, with narrow silvery basal bands on intermediate segments, the fourth faintly pruinose at most; first segment without median marginals; second with a single pair; third and fourth with marginal rows, the latter also with discals at the sides but none on the middle above; genital segments black; inner forceps united, flat behind, tapering from base to an acute tip; outer forceps yellowish, shorter than inner pair, tapering outward, the tips rather narrow and darker.

Legs black; claws and pulvilli elongate; wings subhyaline; veins bare except third, which is setulose almost to small cross vein; last section of fifth vein at most one-third the length of preceding section; apical cell closed, with petiole longer than small cross vein; costal spine small.

Female.—Front at vertex 0.252 of the head width (average of five: 0.25; 0.25; 0.26; 0.25; 0.25), widening gradually to base of antennae; parafrontals blackish, subshining; orbitals two pairs, pro-

clinate; outer verticals not developed; third antennal segment slender, yellow at base, four to five times as long as second; abdomen mostly polished black, intermediate segments silvery on the narrow basal margin, fourth with discal bristles above; fore tarsal segments compressed and swollen, the claws and pulvilli minute.

Length.—5 to 6.5 mm.

Type.—Male, U.S.N.M. no. 44772.

Remarks.—Described from 6 males and 11 females. In the United States National Museum: 2 males and 3 females (including the type), Lafayette, Ind., August and September 1917–1921 (J. M. Aldrich); 2 males and 4 females, Plummers Island, Md., September 24, 1902 (Barber and Schwarz), August 1903 (A. Busck), August 3, 1912 (J. R. Malloch), 3 females labeled “at light”, September 7, 1912, without collector’s label; 1 female, Chesapeake Beach, Md., September 19, 1915 (W. L. McAtee); 1 male, Dead Run, Fairfax County, Va., September 30, 1915 (R. C. Shannon); 2 females, Difficult Run, Va., September 19, 1916, and October 28, 1917 (W. L. McAtee). In the Kansas University Museum: 1 pair labeled “Ills. Forbes.”

The species is closely related to *P. singularis*, from which it may be readily separated by the shining black mesonotum; longer petiole of the apical cell; and narrower front in both sexes.

(24) PARADIDYMA ARMATA (Townsend)

Lachnomopsis armata TOWNSEND, Proc. U.S. Nat. Mus., vol. 49, p. 421, 1915.

Front uncommonly broad to vertex and orbitals present in the male sex; parafacial bristles about uniform in length throughout the row; abdomen densely gray pollinose.

Male.—Front at extreme vertex 0.33 and 0.35 of the head width in two specimens, not much wider at base of antennae; parafrontals gray pollinose to vertex, sparsely haired outside of frontal rows; median stripe red, narrower than one parafrontal on entire length; inner and outer verticals developed; orbitals one pair, proclinate; ocellars present; frontals extending to apex of second antennal segment, the uppermost stronger and reclinate; face rather strongly receding and concave above the mouth in profile view, not very deep; facial ridges divergent below and haired on lower fourth or less; parafacials gray pollinose, a row of bristles along the inner margin that are noticeably smaller than the lowermost frontals, bare outside the main rows below base of third antennal segment; vibrissae on level with front edge of mouth; antennae slightly shorter than face, third segment black, about four times length of second which is mostly yellow and distinctly longer than the first; arista thickened to apical fourth, basal segments short; cheek fully one-third the eye height; palpi slender, pale yellow; eyes distinctly hairy.

Thorax and scutellum black, gray pollinose; mesonotum marked with four narrow black stripes, outer ones interrupted at suture and stopping before base of scutellum; chaetotaxy as in *validinervis*; postscutellum gray pollinose, pale membranous above; infrascapular hairs present; calypters tawny, paler at middle.

Abdomen black, wholly covered with gray pollen; first segment without median marginals; second with one pair; third and fourth each with a marginal row; no discals on anal segment; genital segments reddish black retracted; fifth sternite prominent, narrowly and deeply incised, the lobes pale yellow.

Legs black, trochanters yellow, coxae less distinctly so; claws and pulvilli shorter than the apical tarsal segment.

Wings subhyaline; venation normal; third vein haired about half-way to small cross vein; apical cell open a little before the exact tip of wing; costal spine developed; epaulets red.

Female.—Front at vertex 0.349 of the head width (one specimen); fore tarsal segments compressed, the claws and pulvilli minute or atrophied, otherwise very similar to male.

Length.—6 mm.

Type.—Male, U.S.N.M. no. 19442.

Remarks.—Redescribed from three specimens in the United States National Museum. Two paratypes (male and female), Chosica, Peru, May 25, 1913 (C. H. T. Townsend), and one male, Matucana, Peru, April 22, 1914 (C. H. T. Townsend).

There appear to be no characters of generic importance, common to both sexes, that distinguish the species from *Paradidyma*. The secondary sexual characters in the male, viz, the wide front and presence of orbital bristles, at once separate it from all other known forms. The female, however, agrees in the essential characters of the present genus. As usual the front tarsi are compressed and swollen, with the claws and pulvilli minute or atrophied.

UNRECOGNIZED SPECIES

The following species apparently belong to *Paradidyma* but have not been identified in the material contained in the United States National Museum. Both species were characterized in abbreviated descriptive terms, which were kindly transcribed for me by the late Dr. J. M. Aldrich. The types are located in the Experiment Station Collection, Lima, Peru.

ATROPHOPODA PERUANA TOWNSEND

Atrophopoda peruana TOWNSEND, Rev. Chil. Hist. Nat., vol. 31, p. 159, 1927.

Body length, 5 mm.; wing length, $4\frac{1}{4}$ mm. 1 male, Cacaturo, Piura Province, Peru, May 22 on herbage.

Blackish; head silvery white, facial plate and facial ridges gray; parafrontals blackish by direct view, thinly pollinose; frontal stripe dark brown; first antennal joint brown; second joint and palpi very pale fulvous; third joint blackish; pleura silvery, mesoscutellum and scutellum less thickly so; two heavy wide black thoracic vittae unbroken and reaching scutellum; abdomen shining; median vittae and narrow bases of intermediate segments thinly silvery, fourth segment more widely on base. Legs black. Wings pale smoky yellowish on costa and veins. Squamae glassy-whitish.

Apparently quite similar to *Paradidyma (Diaphoropeza) peruana* (Townsend), which was also described (female only) from Peru. The present form may be the male of the last mentioned species, but it seems impossible to decide without specimens available for comparison.

PARADIDYMA PERUVIANA TOWNSEND

Paradidyma peruviana TOWNSEND, Rev. Chil. Hist. Nat., vol. 31, p. 159, 1927.

Body length, 7 mm.; wing length, 6 mm. One female, Chosica, Peru, 3,000 ft., Oct. 18, indoors.

Differs from *P. validinervis* by female vertical width well over one-third head width; frontals two below base of arista; width of frontal stripe two-thirds of one parafrontal at middle; ocellars of same strength as hind proclinate fronto-orbital; facio-orbitals eight or nine in row along inner edge of para-facials; cheek two-fifths the eye length; third vein bristly halfway to anterior cross vein; apical cell closed considerably before wing tip; hind cross vein much nearer bend of fourth and hardly its own length from same; palpi yellowish or fulvous; four moderately wide, equal black thoracic vittae not very heavy; wing veins yellowish; "nos"⁴ infusate.

According to the description the species is distinct from all other members of the genus by the frontal bristles descending beneath the base of the arista. This character, the wide front, and the strong ocellars should make the species easily recognizable.

⁴ Meaning unknown, probably a misprint.